

# The Eau Froide river flood protection project (Switzerland)

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## CONTEXT

The Eau Froide River flood protection project was launched following the events that occurred on the industrial zones of Roche and Villeneuve in 2005 and 2006. A major event that devastated the village of Roche occurred also in summer 2007. The town of Villeneuve and the Simplon railway line towards Italy are also threatened.

Studies and realization of this project were conducted in the form of a «River Correction Corporation». This specific entity associates the cantonal and the municipality authorities as the contracting authority (project owner).

Protective measures are based on hazards assessing (establishment of hazard maps) and risk analysis according to the federal guidelines. The sum of damages is estimated at CHF. 120 Mio. for the 100-year flood. The cost of the measures amounts to approximately CHF. 12 Mio. Therefore the project is economical and efficient (positive balance), as the cost/benefit ratio was estimated at 4.9. The works were undertaken in autumn 2008 (immediate measures and priority measures) and will end in 2015.

## OBJECTIVES - INTEGRATED PLANNING

The objectives are summarized in the figure 1 below.

## PEOPLE AND PROPERTY PROTECTION

For the 100-year flood and lower discharges, the protection project is based on retention measures (flood and sediments retention basins) and confinement measures (secondary dams, topographical adjustments), made by optimizing existing inundation areas in the floodplain (farming and forestry areas). These measures are complemented by structural measures at river channel (increasing flood capacity and improvement of existing structures).

For larger discharges, flooding is admitted and managed in areas with low damage potential, combined with local or object protection measures. Finally, a prevention and action plan was established.

## LAND-USE PLANNING

The project boundary is on the edge of a rapidly expanding urban area between Villeneuve, Roche and Rennaz. Land-use is characterized by village, industrial, farming, public utility, building (habitat and crafts) and natural areas. This area will also soon house a new regional hospital, and recently home the new road junction that allows a direct relationship between the highway exit of Villeneuve in the direction of the French border. Thus the river space decreased gradually over time.

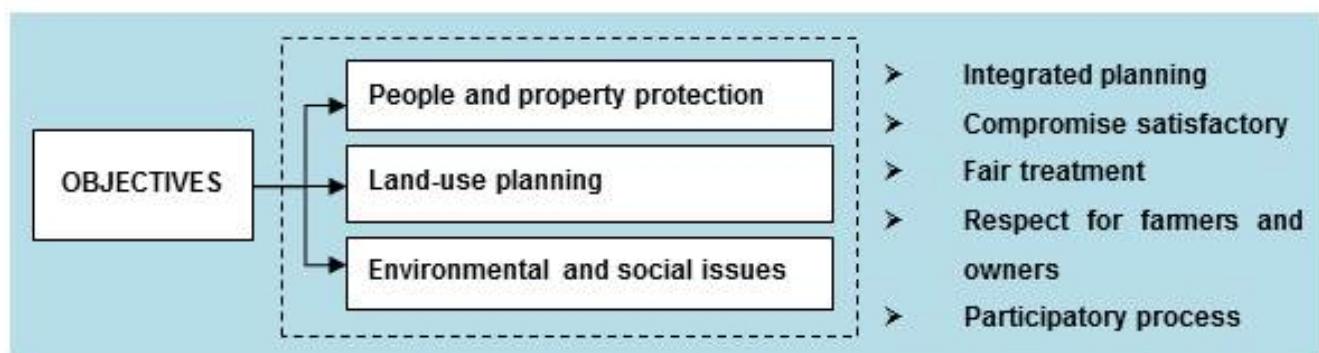


Figure 1. Objectives – Integrated planning

In order to restore the necessary river space (flood control and ecological standpoint), the expansion of the industrial zone was stopped; the remaining agricultural areas were perpetuated to achieve the necessary large inundation areas. Finally the project allows the conservation of existing economic values, with flooding management on agricultural and forest areas.

#### ENVIRONMENTAL AND SOCIAL ISSUES

The lower Rhône floodplain in the project and its surrounding area is a region of significant natural and landscape value (many items carried in local, cantonal, national and international inventories). The Eau-Froide River and its surroundings join as a link between these different zones, unfortunately strongly degraded and interrupted.

This region is seen from the populated hillsides of the Riviera, which provides a rather complete view of the Granettes and the lower Rhône floodplain area. Thus, the progressive industrialization and implementation of intensive vegetable farming (greenhouses construction) means that the development of a natural area in connection with the watercourse becomes important.

Thereby many environmental measures (river restoration measures) were implemented in order to satisfy the identified ecological potential and the defined objectives.

From the relaxation and walking areas perspectives, the Eau-Froide River is a relatively quiet area within a high-growth space. The project area provides a natural haven which offers a hiking and natural link between the towns of Villeneuve, Rennaz and Roche. These links already exist, and the project strives to preserve and improve them, and increase the overall quality of the site.

#### CONCLUSION

Territorial and environmental issues form an integral part of the project. This is reflected in the protection objectives, as well as in the land-use practice required for the implementation and sustainability of protective and environmental measures.

The flood control concept integrated all involved partner (local, cantonal and federal authorities, landowners and farmers) in a participatory process. The respect of landowners and farmers, as well as the principle of fair treatment, were the project management watchwords.

#### KEYWORDS

Flood protection measures; Integrated planning; People and property protection; Land-use planning; Environmental and social issues.

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